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House of Representatives Joins Peer Review Process

Those scientists who have perceived threats to scientific freedom in the recent spate of criticism of research projects with trivial-sounding titles may now have something a bit more substantial to worry about. On April 13, on the eve of its Easter recess, the House of Representatives passed a supplemental appropriations bill containing a little-noticed provision cutting off federal support for a specific research project which had offended the sensibilities of a powerful Republican member.

The provision was tucked away in the House appropriations committee's report on the bill. It was accepted without debate, apparently with few members of Congress even aware of it. Certainly, those Congressmen who have stoutly defended the peer review process against various assaults this past year remained silent,

Researcher Sues Proxmire, Staff Aide for \$6 Million—Page 2

even though the measure could be interpreted as direct political interference with that process.

The project has been at the center of a controversy for nearly a year, with an assortment of people taking well-publicized pot shots at it. It has two key ingredients for a controversy — sex and marijuana. A 2-year project designed to measure the effects, if any, of marijuana on human sexual behavior, it would involve giving measured doses of marijuana to volunteers, showing them various visual stimuli, such as erotic films, and measuring their responses. Another part of the experiment would involve taking blood samples from the volunteers to measure the levels of circulating sex hormones.

The principal investigator, Harris Rubin of Southern Illinois University Medical School, is a behavioral scientist who has specialized in studying sexual behavior since 1965. In fact, he has recently completed a study of the effects of alcohol on sexual responses, almost identical to his proposed marijuana study.

Rubin's project was approved for funding in June last year by the National Institute on Drug Abuse (NIDA), following review of the scientific merits of the proposal by a committee of behavioral scientists and a site visit to Rubin's laboratory by two researchers. One of them, Joseph Brady of Johns Hopkins University, last week described the review of Rubin's project as "a model of the way the peer review system should and can work."

NIDA awarded Rubin \$121,000 over two years.

It did not take long for news of the project to reach the press, and it was extensively reported around the Southern Illinois University campus in Carbondale, and in nearby St. Louis. In August, Senator Proxmire (D-Wisc.), never one to miss a bit of publicity by deriding "wasteful" federal research, added to the discussion with a press release denouncing Rubin's project as "one of the most shocking examples of the 'federal love machine' I have ever found."

Then Rubin's troubles began in earnest. Last July he applied to the Department of Justice for a routine grant of immunity from prosecution — a standard procedure

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In Brief

The Federal Advisory Committee Act has ended the closed-door-meeting practices of lots of federal agencies since it went into effect 4 years ago, but nearly half of all advisory meetings last year were wholly or in part closed to the public. According to the latest annual compilation, just published by the General Services Administration, 52 per cent of all meetings were fully open, 20 per cent were closed, and 28 per cent partially closed. An odd couple, DoD and the National Endowment for the Humanities, ranked 1st and 2d with wholly closed meetings.

Former Congressman Emilio Q. Daddario, director of the Office of Technology Assessment, has been awarded the National Academy of Sciences Public Welfare Medal for "sustained contributions to science and the national welfare" during his years in the House. Back in the late 1960s, when a lot of Congressmen found a plump target in massive research expenditures, Daddario, chairman of a research subcommittee, was one of the few to listen sympathetically to the anxiety-ridden elders of the profession.

NSF announces that it has some travel money available for senior scientists who want to make short-term visits to India "to exchange information, consult, or collaborate on specific projects with their Indian colleagues." Also that proposals are invited for projects to be supported by the US-Israel Binational Science Foundation. For further information, contact NSF, Division of International Programs, 1800 G St. N.W., Washington, DC 20550. Telephone: (202) 632-5796.

...Highest Ranking Committee Ever to Review a Project

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for experimenters using illegal drugs. Normally such grants are given without any difficulty, but in this case, the Department sat on Rubin's application until January and then asked the Secretary of HEW to re-evaluate both the proposal and Rubin's competence as a researcher.

A meeting of the head of NIDA, the Administrator of FDA, the Assistant Secretary of HEW for Health, and several outside experts — surely the most powerful committee ever to evaluate a single research project — was called to review the matter on March 11. HEW Secretary David Mathews is still considering the committee's recommendation, which is believed to support Rubin's project, and he also has on his desk a resolution, passed unanimously in February by the NIDA National Advisory Council — the nation's highest advisory committee on drug abuse — endorsing the project.

While the project was generating controversy and racking up those endorsements, Rep. Robert Michel (R-Ill.) stepped in. The House Minority Whip and the ranking Republican on the HEW appropriations subcommittee, Michel was in an ideal position to shoot at the project. He had twice brought the matter up with HEW officials during appropriations hearings, and had asked HEW to terminate the project. Finally, he was instrumental in writing into the supplemental appropriations bill a provision which would cut off Rubin's grant.

Aside from arguing that the project is offensive and a

waste of money, Michel has charged that it is scientifically flawed — the peer review committee's evaluation notwithstanding — and that it does not have the support of the Carbondale community.

Rubin vehemently denies Michel's charges, arguing that he sought out local opinion before sending in his grant application. Moreover, Robert DuPont, the head of NIDA, said last week that he has a "fistful of letters" from people in Carbondale supporting the project, and that he is "satisfied that there is sufficient community support in Carbondale for this project."

Asked whether he considers the vote in the House to be a threat to the peer review system, DuPont pointed out that Congress has the right to determine how federal money is spent, but added that "if Congress is going to reverse the considered judgment of the peer review process, I think Congress should be extremely cautious about setting a precedent. I don't think it has given its full consideration to this project."

Rubin agrees, and to ensure that the matter gets more attention in the Senate, he has sent a "dear colleague" letter to numerous scientists asking them to contact their Senators and point out the implications for the peer review process. If the measure passes the Senate, Rubin argues, "politicians rather than scientists will be determining what specific research will be conducted."

Though that is something of an exaggeration, the precedent set by the House at least warrants more attention than it has received so far.—CN

Proxmire's Golden Fleece Award in Libel Suit

One of the well-publicized "Golden Fleece Awards" that Senator William Proxmire (D-Wisc.) bestows monthly for alleged wastefulness by federal agencies has inspired a \$6-million suit by an experimental psychologist who contends he was libeled when the Senator criticized the agencies that supported his research.

The suit, filed last month by Ronald Hutchinson, who was director of research at Kalamazoo (Michigan) State Mental Hospital when the award was announced in April, 1975, names as defendants Proxmire and a staff assistant, Morton Schwartz.

Hutchinson, who left the hospital last July to work fulltime at the nearby Foundation for Behavioral Research, which he founded in 1972, was the recipient of financial support from NSF, NASA, and the Office of Naval Research for research on responses to stress. Working with rats, monkeys, and humans, Hutchinson

was studying, among other things, the incidence of teeth clenching in stressful situations. In announcing the Golden Fleece Award to the three agencies, Proxmire stated in a press release, "The good doctor has made a fortune from his monkeys and in the process made a monkey out of the American taxpayer."

Proxmire said that the sum of Hutchinson's support from the three agencies was nearly \$500,000 over several years.

Since statements by members of Congress while on Capitol Hill or elsewhere in close connection with their official duties are immune from legal action, the press release alone would provide no basis for a suit. But Hutchinson charges that Proxmire subsequently discussed the award on radio and TV talk shows, and that in doing so, the Senator went outside his legal immunity. The statements, Hutchinson says in the suit,

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Chemical Weapons Statement Dampens Hopes for Pact...

Hopes for a major breakthrough in chemical disarmament negotiations, now in their seventh fruitless and frustrating year at the Conference of the Committee on Disarmament in Geneva, have not been improved much by a long-anticipated statement delivered April 13 by the chief US negotiator, Joseph Martin Jr.

Although the statement, the most explicit outline of US policy yet delivered, offers a few promising initiatives, it also indicates that there has been little progress on the problem of how a chemical weapons treaty could effectively be policed. That has been the major stumbling block since the negotiations began in 1969, and Martin's statement indicates that it will continue to frustrate the talks.

The tone of Martin's remarks was set out at once. "Some delegations have assumed that we now have all the elements we need to build an effective CW (Chemical Weapons) agreement — and, accordingly, that all that is now required is a political decision to conclude an agreement. My government does not share this assumption," he said. He added, "In our judgment it fails to take into account crucial questions that are still

unanswered. It is particularly in the area of verification where effective solutions are not yet at hand."

As usual in such matters, the United States is insisting that on-site inspection would provide the only sure means of policing a chemical weapons treaty, while the Soviets are balking at the prospect of having foreigners visiting their military installations.

Martin went on to rule out a single, comprehensive chemical disarmament treaty. "As long as the retention of some CW stocks is regarded as important for deterring an adversary from using CW, it would not be realistic to expect the United States, or other states, to give up their entire CW capability without adequate assurance that other states were doing the same," he said, adding that there is no way to detect clandestine CW stockpiles, and "little prospect" of ever being able to do so. (A similar situation exists with biological weapons, but they were considered of such limited military use that a disarmament treaty was negotiated without any sure verification means at hand.)

One way out of the impasse would be to negotiate a

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PROXMIRE *(Continued from Page 2)*

damaged his professional standing and led to the loss of some support for his research.

None of the parties would make any public statement on the case.

The suit has aroused a good deal of interest in Washington research circles, where there has long been considerable resentment over the publicity that members of Congress have reaped by ridiculing research projects. Proxmire, who started the awards a year ago, is actually a latecomer to the practice, but he did it better than most, and has gotten a great deal of press attention for his efforts. The Senator, of course, is occupied with too many activities to do it all himself, which accounts for the presence of a co-defendant, staff member Schwartz, in the suit. An economist and former college teacher, Schwartz has done the digging for the awards since their debut in March 1975. The prize that grew out of support for Hutchinson's work was the second to be awarded

and quickly produced a thick pile of press clippings from around the country.

Since it is a rarity for a member of Congress to be sued for libel, the question of who is to pay for legal counsel is unclear. One possibility is that the Justice Department might offer assistance, but it may be assumed that a Democratic Senator would have reservations about putting his fate into the hands of a Republican Justice Department, no matter how well intentioned it might be. Furthermore, the provision of counsel by the Executive Branch raises lots of bothersome questions about the separation of powers.

Another possibility is that the Congress itself, whose members have more than slight interest in the issue of how far their immunity extends, might offer assistance.

Since the meter starts running at a stiff rate as soon as a lawyer says "Hello" to a phone call, the Senator and his aide will have to work out something soon. Their response to Hutchinson's suit is due within two weeks.

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Contributing Editors

Colin Norman, Pamela Moore

Editor and Publisher

Daniel S. Greenberg

Circulation Manager

Alice Anne Freund

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Demand for On-Site Inspection Remains Stumbling Block

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phased chemical disarmament treaty, beginning with a ban on the production of new chemical weapons. The one ray of hope in Martin's statement is that the United States is willing to pursue that option. Noting that the Canadians had proposed in 1974 a treaty "to ban all lethal CW production and, in addition, to require the destruction of a certain amount of lethal CW stocks over a specified period," Martin suggested that it "appears to represent a realistic compromise" and "merits serious consideration by the committee."

It should be noted that since chemical weapons have a limited shelf life, a production ban would cause stockpiles of deliverable weapons to deteriorate, eventually to the point of uselessness. How long that would take is, however, a matter of some dispute.

The catch in all this, of course, is that the US is not convinced that verification measures are adequate even to police a production ban. Martin did, however, offer a sliver of hope here, too. Noting that a verification system for a production ban would not have to meet all the requirements of a control system for a complete CW ban, Martin stated that "we do not regard it as essential

to provide an absolute guarantee." All that is needed, he said, is a system which would set the "difficulties of evasion and the probabilities of detection high enough to act as an effective deterrent."

He offered a few suggestions for a non-intrusive policing system, such as an exchange of information between signatories on production of industrial chemicals with weapons potential, and on expenditures for defense against CW agents. But Martin noted that "studies conducted by my government indicate that the effectiveness of this technique in detecting determined evasion schemes would be extremely limited."

Again, on-site inspection is the system being advocated by the US, and Martin suggested that the committee should thoroughly consider a system of "inspection by challenge and mandatory inspection."

Finally, Martin announced that if a treaty could be negotiated, the US would support the establishment of an international authority to help in policing it. The authority would collect and disseminate production and other data required by the treaty and "assume important responsibilities with regard to treaty compliance, including making arrangements for any on-site inspection."

The prospects for a major breakthrough at the talks therefore seem dim, unless an unexpected change of attitude on verification takes place.

Meanwhile, in case you are wondering what happened to the 1974 Nixon-Brezhnev promise for a joint US-USSR initiative at the chemical disarmament talks, an Administration source said last week that there has been little progress.—CN

Top HEW Planner Quits Post

Stuart H. Altman, widely acknowledged to be the most influential health planner on the federal scene, is leaving his post at HEW, and the move can be taken as a signal that the Ford Administration does not intend to push for national health insurance this year.

Altman, who for 5 years has been HEW's deputy assistant secretary for planning and evaluation/health, was the architect of a health insurance scheme that won the nominal approval of the Nixon and Ford administrations, as well as considerable Congressional support. Last year, it looked as though final approval of the measure would be achieved, but then Ford, proclaiming a need for austerity, backed down.

A former teacher of economics at Brown University, Altman will leave HEW this summer to become a visiting professor at the University of California's School of Public Policy, at Berkeley.

Associates say that if there were any chance for passage of the legislation in the reasonably near future, there is no doubt that Altman would want to be on hand for the startup period.

NSF Issues R&D Funds Report

Federal Funds for Research, Development, and Other Scientific Activities, Fiscal years 1974-76, a must item for collectors of R&D numbers, is available for \$1.80 per copy from the US Government Printing Office, Washington, DC 20402. Order by Stock No. 038-000-00265-1.

The publication, the 24th of an annual series prepared by NSF, contains comprehensive data on categories of R&D supported by federal agencies, the performers of the work, financing of R&D facilities, geographic distribution of R&D spending, and much else.

Agreement Reached on New White House Science Office

The re-opening of a White House science advisory office is now assured, following a House-Senate conference which gave the President what he wants—an advisory setup that will possess no power to stir up trouble, as did its predecessor.

The conference, which ended six weeks of bickering between the two chambers, concluded with the House winning on the points at issue. In all instances, the decisions were based on the concept that the President should be allowed the organizational arrangements that he wants, rather than those that Congress thinks might be good for him (SGR Vol. 6, No. 6).

As a result, the new organization, which will bear the title of the Office of Science and Technology Policy (OSTP), will not arrive as a powerhouse on the Executive Office staff, but will be a fairly small and low-level operation that is intended to serve Mr. Ford's existing staff.

The Senate bill, which largely reflected the designs of Senator Kennedy, sought a large helping of power for the OSTP mainly through provisions that would have thrust the office deep inside the budget-making process. The White House, which understandably prefers to decide for itself on who is to be influential in that crucial area, balked at the Kennedy ploy, and was backed all the way by the House, which consistently took the position that Congress should not presume to organize the internal affairs of the White House. On the budget provision and others, too, the whispered threat of a veto prodded the Senate toward the House position. The Kennedy camp did not like it, but neither did it wish to be blamed for thwarting a unanimous desire to undo Nixon's 1973 demolition of the old Office of Science and Technology.

In regard to budgetary matters, the OSTP will draw up 5-year plans that are supposed to show the Office of Management of Budget what can be accomplished at various levels of spending for research and development. However, its role in money matters will not extend beyond that, and since the Capital is awash with multi-year visions for federal spending, there is no reason to assume that the OSTP's will be especially influential.

The office will be headed by a presidentially appointed director, assisted by four associate directors, and the director will serve as the President's science adviser.

Along the lengthy route to agreement between the two houses, Kennedy dropped another scheme to raise the

influence of the office, namely, that the director should hold membership on the National Security Council. The White House balked at that, pointing out that heretofore, membership has been confined to the President, Vice President, and the secretaries of State and Defense. The Presidential science adviser, it was argued, is pretty far down the ladder in relation to those eminences. While the science bill was working its way through Congress earlier this year, Mr. Ford demonstrated his determination to maintain the selectivity of Council membership by vetoing a bill to give the Secretary of the Treasury a seat on the NSC. Congress swiftly overrode the veto, but there was no chance that it would do the same in behalf of a mere White House staff official.

The compromise version designates the science adviser as an adviser to the NSC, which is close to meaningless since the NSC has always been free to select its advisers, which means it is free to ignore any adviser, even if he has been designated by Congress.

The compromise bill does provide for membership on the Domestic Council, an 18-member body that ranges from the President himself down to the executive director of ACTION and the Energy Resource Council.

Another Kennedy item jettisoned by the conference was a provision to provide each state with a one-time \$200,000 grant to promote science and technology planning at the state level. The White House said that the measure conflicted with its preference for revenue sharing on a non-categorical basis.

And the White House also prevailed on its preference for calling the new operation the Office of Science and Technology Policy, rather than the Office of Science, Technology, and Engineering Policy. The engineers got into the title in a kind of last-minute, absentminded fashion when the Senate was putting the final touches on its version of the bill. Once in, they fought hard through their professional societies to stay in there. But the White House took the position that engineering is a profession while science and technology are general "fields," and that if engineering is accorded recognition in the title, why shouldn't other professions? A bit of lobbying from other professions was stirred up by White House staff members, and the Senate backed down.

Finally, the bill provides for a 2-year study of national research and development programs and policies by a council headed by the OSTP director. The council may be continued beyond that period at the

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Nuclear Commission Rejects Plutonium Challenge

When two scientists from the Natural Resources Defense Council (NRDC) put forward their so-called 'hot particle' theory two years ago, it immediately loomed large as a threat to the nascent nuclear reprocessing industry and to future plans to use plutonium as a reactor fuel. The theory, that tiny particles of inhaled plutonium constitute a serious health hazard since they may lodge in the lung and deliver a prolonged dose of radioactivity to a small area of tissue, seemed implicitly correct. In that case, federal standards governing exposure to plutonium are too lax by a factor of more than 100,000.

But, on April 12, the Nuclear Regulatory Commission (NRC) quietly rejected the theory, arguing that available scientific evidence does not support it. NRC argued, in a long statement published in the *Federal Register*, that its current plutonium exposure regulations are sufficiently conservative to protect public health, and it cited three scientific studies, produced by the former AEC, the National Committee on Radiological Protection and the British Medical Research Council, in support of its arguments.

Tom Cochran and Arthur Tamplin, the two NRDC scientists who put forward the theory, are miffed because NRC rejected their arguments without calling public hearings on the matter, and without waiting for a report from a committee of the National Academy of Sciences established specifically to investigate their theory. The Academy's report is expected in about a month's time. Cochran and Tamplin are now considering whether to go to court in an attempt to force NRC to hold hearings.

The hot particle theory is particularly relevant to a crucial matter now under consideration by NRC, namely, whether or not plutonium should be recycled as a reactor fuel. Since most of the scientific evidence so far indicates that the Tamplin-Cochran theory is incorrect, NRC moved to dismiss the theory without getting bogged down in lengthy public hearings which could delay its consideration of other issues relating to the plutonium recycle decision. Though the weight of scientific evidence may support that move, NRC may be compelled — should a court action be successful — to explain its decision in great detail.

Stever Now Being Mentioned for OSTP Director

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discretion of the President. Its makeup and performance is potentially of great significance, since it is the closest counterpart that the bill provides for the old President's Science Advisory Committee, the group of commuting elder statesmen of science that gave considerable class and influence to the previous White House science office. The trouble with PSAC, however, was that it did not harmonize well with the Johnson and Nixon administrations, and its lack of team spirit contributed a good deal to Johnson's peevishness toward the science office and Nixon's decision to wipe it out.

With a compromise bill now ready for passage by both houses of Congress, it seems likely that it will be ready for the President's signature before the end of this month. Since Mr. Ford has far outdone his two predecessors in extracting favorable attention through symbolic nods to the scientific community, it is likely that the signing will be the occasion for more than a bit of ceremony.

Still to be resolved is the selection of a director for the OSTP. Late last year, before the legislation was unexpectedly delayed in Congress, Mr. Ford appointed two advisory groups to perform preparatory work for the office. Their co-chairmen, Simon Ramo, a founder and top executive of the TRW conglomerate, and William

O. Baker, president of Bell Labs, have off and on been mentioned as likely candidates for the directorship. But with the clock running out on the present Administration, more frequent mention has lately been given to another candidate, H. Guyford Stever, who, as director of the National Science Foundation, has been doubling as presidential science adviser. The argument in behalf of Stever is that he is already deep into the job and would need no get-acquainted period for setting up the new office.—DSG

California Nuclear Initiative

A booklet which should prove to be useful to both sides as the June 6 California nuclear initiative enters the home stretch has been published by Stanford's Institute for Energy Studies.

A 200-page discussion of the initiative and its ramifications, together with an analysis of some of the broader issues affecting nuclear power, it takes no stand on either side of the debate. The booklet, *The California Nuclear Initiative*, is available from Nuclear Analysis, Institute for Energy Studies, Stanford, California 94305, for \$3.50.

In Quotes: A Plea for Kindness to Elite Universities

The depiction of "Harvard on the Way Down," as contained in a recent issue of Harper's, is open to question, but a little-noted talk that Harvard President Derek C. Bok delivered at the annual meeting of the American Association for the Advancement of Science indicates that the university, once so well favored by federal research planners, is awash with distress over its treatment by Washington. Following are excerpts from the address, titled "Universities and National Research Policy":

What has happened, essentially, is that the postwar period of ebullience and prosperity has suddenly given way to a mood of austerity and national insecurity. This new environment lays bare several fundamental tendencies in a democratic society that pose special danger for the research university.

...our political system produces obvious pressures to satisfy the needs of the majority and to spread resources evenly over a large number of claimants. . . . If there is too little money to satisfy all these claims, the needs of institutions of special quality are readily dismissed as elitist and unnecessary. . . . If programs do not command strong political support, their costs and benefits must be calculated and quantified as objectively as possible. Such a process is not kind to the intangible values that characterize so much of the work that universities do. . . .

In many states, funds for education are increasingly spent to build up a vast array of state and community colleges at the expense of the great state universities. Even foundations have allocated a steadily diminishing portion of their funds to universities, and the funds they still provide are increasingly given, not to strengthen the central activities of academic institutions, but to use universities as vehicles to attack social problems of immediate concern. . . .

Although federal support for higher education has continued to increase, the nature of the support has shifted heavily from research toward universal access for all young people to a college education. . . .

Looking further at the patterns of federal funding, we can observe a steady shift in funds away from the leading centers of research toward a broader distribution that favors a larger number of institutions. Since 1967, the proportion of federal funds for research and development received by the 20 leading university recipients has declined from 46% to 35%. This tendency is particularly marked in fields where federal support has been receding. In engineering,

mathematics, and the physical sciences, the decline in federal support has been much more severe for the 20 leading research institutions than for the fields as a whole. . . .

In short, there is little evidence today of a cooperative effort to maintain the health and vitality of the great research institutions. Instead, government agencies are more inclined to bargain at arms length with educational institutions to buy their services at the least possible cost.

Engineers Issue Roster of Women, Minority Students

In conjunction with its efforts to open the ranks of the profession, the Engineers Joint Council has published a *Roster of Women and Minority Engineering Students — 1976*, which lists 4906 students at 193 engineering and technology schools. The listed students are expected to graduate during 1977-78, and may be contacted through addresses in the *Roster*. An EJC announcement says the *Roster* is "published as an aid to students seeking employment and to employers and schools having affirmative action programs."

EJC says that copies are available at participating schools and minority organizations. They may be purchased for \$60 each from the Engineers Joint Council, Dept. P, 345 East 47th St., New York, NY 10017.

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Study Sees Little Federal R&D Impact on Civilian Sector

The latest offering from the National Bureau of Standards' Experimental Technology Incentives Program (ETIP) is a bluntly worded criticism of past federal R&D policies which concludes that federally funded civilian R&D is insufficient, by itself, "to bring about technological change in the private sector to any significant extent."

The report, produced by the Washington office of Arthur D. Little, Inc. (ADL), was prepared under the direction of Michael Michaelis and, until December 1974, William Carey, two longtime observers of the Washington science policy scene. It is based on an analysis of federal policies in six different sectors — nuclear power, coal extraction and conversion, motor vehicle safety, urban mass transportation, edible protein from soy beans, and biological pesticides.

"Countless examples show that R&D cost is a small part of bringing technological innovation into the marketplace. This fact is often overlooked by federal policymakers in both the executive and legislative branches. It is one of the reasons why many US companies with proven records of developing and marketing new products often shun federal R&D funds and why so many federal R&D products are shelved," the report states.

The "mythology" surrounding the impact of federally supported R&D on industrial innovation is derived from success stories such as the Apollo program, the report suggests. "What is too often overlooked," it continues, "is that in such instances the government was not only the funder of R&D, but it was also the customer for the resulting hardware and systems."

That situation, in which the government is the sole provider of funds for R&D and the sole purchaser of the resulting products, is becoming less common. In the past six years, the report notes, the proportion of

federal R&D funds channeled into the civilian sector has risen from 23 to 35 per cent. "The new customers are industry, local government, and private citizens. In these instances, the funder of R&D, the performer of R&D, the manufacturer using R&D-generated knowledge, and the customers are separate and autonomous elements related through the workings of the market."

The report thus comes to the predictable conclusion that the federal government should play a more active role in the marketplace "when deficiencies in its workings are detrimental to the economic or social well-being of the country. Merely funding civilian R&D is insufficient to correct those situations."

Those suggestions have, of course, been made before, in a series of reports produced by various government agencies in the late 1960s, and, more recently, by an ADL study prepared in 1973 for the National Science Foundation (SGR Vol. III, No. 18). The difficult problem, however, is to determine how, and when, the government should get involved in the marketplace. The report does not offer many suggestions on that score, beyond the wistful recommendation that "policies for federal funding of civilian R&D should be formulated in the larger context of the complex process of innovation."

Nevertheless, its observations and conclusions have clear and obvious implications for major government R&D ventures, such as the development of alternative energy technologies. There, the government is a very large provider of R&D funds, but will ultimately be a minor purchaser of the products.

The report is available without charge in two volumes, titled *Federal Funding of Civilian Research and Development*, from the Experimental Technology Incentives Program, Room A735, Administration Building, NBS, Washington DC 20234.

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